

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference NT1268PCT	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP2003/010178	International filing date (<i>day/month/year</i>) 08 August 2003 (08.08.2003)	Priority date (<i>day/month/year</i>) 09 August 2002 (09.08.2002)
International Patent Classification (IPC) or national classification and IPC H01L 27/04, H02M 3/155, G11C 17/00, H02M 3/00		
Applicant	HITACHI, LTD.	

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 9 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 08 August 2003 (08.08.2003)	Date of completion of this report 26 February 2004 (26.02.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2003/010178

I. Basis of the report**1. With regard to the elements of the international application:***

the international application as originally filed
 the description:

pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
 the language of publication of the international application (under Rule 48.3(b)).
 the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

contained in the international application in written form.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority in written form.
 furnished subsequently to this Authority in computer readable form.
 The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

the description, pages _____
 the claims, Nos. _____
 the drawings, sheets/fig. _____

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/JP 03/10178

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-35	YES
	Claims		NO
Inventive step (IS)	Claims	2-3, 18-22, 32-35	YES
	Claims	1, 4-17, 23-31	NO
Industrial applicability (IA)	Claims	1-35	YES
	Claims		NO

2. Citations and explanations

Document 1: US 5677874 A (Sharp Kabushiki Kaisha), 14 October 1997

Document 2: JP 63-062273 A (Toshiba Corp.), 18 March 1988

Document 3: US 5469399 A (Kabushiki Kaisha Toshiba), 21 November 1995

Document 4: US 5420558 A (Fuji Electric Co., Ltd.), 30 May 1995

Document 5: JP 60-257161 A (NEC Corp.), 18 December 1985

Document 6: Microfilm of the specification and drawings annexed to the written application of Japanese Utility Model Application No. 024026/1984 (Laid-open No. 136156/1985) (NEC Kansai, Ltd.), 10 September 1985

Document 7: JP 09-051672 A (Sumitomo Metal Industries, Ltd.), 18 February 1997

Claims 1 and 4

The invention described in claims 1 and 4 does not involve an inventive step in the light of document 1 and document 2 cited in the international search report.

Document 1 discloses a feature wherein a low-voltage power source voltage supplied from an external source is stepped up using a DC-DC converter, and the output voltage stepped up by the DC-DC converter is stepped up using a

charge pump circuit, and document 2 discloses a feature wherein a voltage stepped up using a step-up circuit is output via a voltage control circuit, and in the light of the disclosures in document 2, a person skilled in the art could easily conceive of constituting the step-up circuit disclosed in document 1 so that a voltage is output via a voltage control circuit. Further, arranging a step-up circuit and an internal element on the same substrate is merely standard practice in the art, and a person skilled in the art could easily conceive of applying said standard practice to the feature disclosed in document 1.

Claims 2 and 3

The invention described in claims 2 and 3 is novel and involves an inventive step relative to the documents cited in the international search report.

The invention described in claims 2 and 3 is not disclosed in any of the documents cited in the international search report, nor would it be obvious to a person skilled in the art.

Claims 5 to 8

The invention described in claims 5 to 8 does not involve an inventive step in the light of document 1, document 2, and document 3 cited in the international search report.

Document 3 indicates that the step-up ratio of a DC-DC converter is proportional to the duty ratio of a switch, and in the light of this disclosure, a person skilled in the art could easily conceive of establishing the duty ratio for the DC-DC converter disclosed in document 1 according to a desired voltage.

Claims 9 and 10

The invention described in claims 9 and 10 does not involve an inventive step in the light of document 1, document 2, and document 4 cited in the international search report.

Document 4 discloses an inductance element comprising a plurality of layers of metal wiring and insulation films provided in between the metal wiring layers, and a person skilled in the art could easily conceive of applying the constitution disclosed in document 4 to the inductance element disclosed in document 1. Further, a decision regarding what terminal to connect a terminal on the inner periphery or outer periphery of the inductance element to is merely a design feature fittingly determined at the discretion of a person skilled in the art.

Claims 11 and 12

The inventions described in claims 11 and 12 do not involve an inventive step in the light of document 1 and document 2 cited in the international search report.

Document 1 discloses the use of a step-up circuit in memory. Further, a person skilled in the art could easily conceive of applying the features disclosed in document 1 and document 2 to a memory card.

Claim 13

The invention described in claim 13 does not involve an inventive step in the light of document 1, document 2, and document 5 cited in the international search report.

Document 5 discloses an integrated circuit wherein an inductance element is formed in the same layer as other internal wiring, and applying the structure disclosed in document 5 to the inductance element disclosed in document 1 would be obvious to a person skilled in the art.

Claims 14 and 17

The invention described in claims 14 and 17 does not involve an inventive step in the light of document 1, document 2, document 4, and document 5 cited in the international search report.

Document 4 discloses a parallel connection-type inductance element having a laminate structure, and a person skilled in the art could easily conceive of utilizing the feature disclosed in document 4 when carrying out the inventions disclosed in document 1, document 2, and document 5. Further, when designing a laminate structure for an inductance element, a decision regarding whether or not to duplicate a conductive body pattern on an upper layer and a lower layer is merely a feature fittingly determined at the discretion of a person skilled in the art.

Claims 15 and 16

The inventions described in claims 15 and 16 do not involve an inventive step in the light of document 1, document 2, and document 5 cited in the international search report.

Document 1 discloses the use of a step-up circuit in memory. Further, a person skilled in the art could easily conceive of applying the features disclosed in document 1, document 2, and document 5 to a memory card.

Claims 18 to 22

The invention described in claims 18 to 22 is novel and involves an inventive step relative to the documents cited in the international search report.

The invention described in claims 18 to 22 is not disclosed in any of the documents cited in the international search report, nor would it be obvious to a person skilled in the art.

Claim 23

The invention described in claim 23 does not involve an inventive step in the light of document 1, document 2, and document 6.

Document 6 discloses a feature wherein an inductance element and another circuit element are laminated together, and in the light of the disclosures in document 6, a person skilled in the art could easily conceive of arranging the inductance element of the DC-DC converter disclosed in document 1 and another element by laminating them together.

Claim 24

The invention described in claim 24 does not involve an inventive step in the light of document 2, document 6, and document 7 cited in the international search report.

Document 7 discloses the use of a DC-DC converter in a step-down circuit, document 2 discloses a feature wherein a converted voltage is output via a voltage control part, and document 6 discloses a feature wherein an inductance element and another circuit element are laminated together, and in the light of the above disclosures, a person skilled in the art could easily conceive of constituting the present invention.

Claims 25 and 27

The invention described in claims 25 and 27 does not involve an inventive step in the light of document 1, document 2, and document 6 cited in the international search report.

When determining the layout of elements on a semiconductor substrate, positioning elements which are to be connected to each other in proximity to each other is a feature to be considered as a matter of course, and the alignment thereof is a feature fittingly determined at the

discretion of a person skilled in the art, and in the light of the disclosures in document 1, document 2, and document 6, a person skilled in the art could easily conceive of constituting the present invention.

Claims 26 and 28

The invention described in claims 26 and 28 does not involve an inventive step in the light of document 2, document 6, and document 7.

When determining the layout of elements on a semiconductor substrate, positioning elements which are to be connected to each other in proximity to each other is a feature to be considered as a matter of course, and the alignment thereof is a feature fittingly determined at the discretion of a person skilled in the art, and in the light of the disclosures in document 2, document 6, and document 7, a person skilled in the art could easily conceive of constituting the present invention.

Claim 29

The invention described in claim 29 does not involve an inventive step in the light of document 1, document 2, document 5, and document 6 cited in the international search report.

Document 5 discloses a parallel connection-type inductance element having a laminate structure, and a person skilled in the art could easily conceive of utilizing the feature disclosed in document 5 when carrying out the inventions disclosed in document 1, document 2, and document 6. Further, when designing a laminate structure for an inductance element, a decision regarding whether or not to duplicate a conductive body pattern on an upper layer and a lower layer is merely a feature fittingly determined at the discretion of a person skilled in the art.

Claims 30 and 31

The invention described in claims 30 and 31 does not involve an inventive step in the light of document 1, document 2, and document 6.

Document 1 and document 2 disclose the use of a step-up circuit in memory. Further, applying the feature disclosed in document 6 to a memory card is not recognized as requiring exceptional creativity or presenting any particular difficulty.

Claims 32 to 35

The invention described in claims 32 to 35 is novel and involves an inventive step relative to the documents cited in the international search report.

The invention described in claims 32 to 35 is not disclosed in any of the documents cited in the international search report, nor would it be obvious to a person skilled in the art.